

HYFREATOR®

more than 250,000 hyfrecators in daily medical use



**symposium on electrodesiccation
and bi-active coagulation**



The HYFREATOR is hung on the wall,
connected and ready for instant use.
Easy to understand . . . Easy to use.

The
HYFREATOR[®]
for

E L E C T R O
D E S I C C A T I O N
F U L G U R A T I O N
C O A G U L A T I O N

Proven in use for over 26 years
by more than 250,000 doctors



No anesthesia usually required; local
may be used if necessary.

Cosmetic results are most gratifying.
No scar customarily results.

Warts, moles and other disfiguring
blemishes are so easily eradicated by
Hyfrecation.

FOREWORD

THE HYFRECATOR is a simple, compact, device creating by use of a spark-gap condenser circuit a very high frequency damped current. Since the energy from it is of relative high voltage but relatively low amperage, it is suited to the accomplishment of all of the long established technics of electrodesiccation and coagulation in surgical practice. It differs only from the conventional spark-gap diathermy in that it is not designed to administer treatment, but is purely for the electrosurgery technics of desiccation and coagulation.

This booklet proposes to briefly outline for the user of the Hyfrecator suggested specific technics as recommended by surgeons who are considered authorities in electrosurgical methods. By no means does this booklet presume to be an authoritative text. It is hoped that it will be a ready reference for the physician, that it will stimulate his interest sufficiently in minor electrosurgery that he may see fit to go to some of the authoritative texts hereinafter mentioned.

Probably there is no one single medicine, one single technic in surgery, nor any one modality in electrotherapy with a broader scope than electrodesiccation. Yet there has been no textbook written on this single subject. As one studies each authoritative text on electrosurgery, he will find that each author has additional or new, or modified technics in which he recommends desiccation. In no one book on electrosurgery will be found all the technics mentioned in this booklet, though a fair number are mentioned in every text. Whereas there are many excellent books in the medical library to which reference may be made, the following books cover the subject quite thoroughly without too much overlapping, and the technics in this booklet are a composite reference to the following texts:

Electrosurgery, by Howard A. Kelly and Grant E. Ward, published by W. B. Saunders & Company, Philadelphia, Pennsylvania.

Clinical Electrosurgery, by G. B. Blech, published by Oxford University Press, New York City, New York.

Electrotherapy and Light Therapy, by Richard Kovacs, published by Lea & Febiger, Philadelphia, Pennsylvania.

Physical Medicine in General Practice, Wm. Bierman and Sidney Licht, eds., published by Hoeber-Harper, New York City, New York.

Tumors of the Head and Neck, by Grant E. Ward and James W. Hedrick, published by Williams & Wilkins Co., Baltimore, Maryland.

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Physical Medicine, by Frank H. Krusen, published by W. B. Saunders Co., Philadelphia, Pennsylvania.

Handbook of Physical Medicine & Rehabilitation, published by the Council on Physical Medicine and Rehabilitation of the American Medical Association, Chicago, Illinois.

Skin Surgery, by Ervin Epstein, M.D., published by Lea & Febiger, Philadelphia, Pennsylvania.

The Hyfrecator will be found suitable for all electrodesiccation technics except for desiccation within the bladder through a Cystoscope. This latter technic requires a more powerful unit than the Hyfrecator due to the electrode being employed under water. The Birtcher-Built No. 770 Electrosectilis is recommended for such work within the bladder.

The two needles furnished with the Hyfrecator, one in the handle and one extra, are suitable for most work on surface growths. In some technics, needles of special types may be desirable. Extra needles of various diameters and of any length are available at nominal charge.

For Bi-Active coagulation, a special needle set will be necessary and is not part of the standard equipment of the Hyfrecator. To those desiring to do bi-active work, the Birtcher-Built No. 789 Bi-active Needle Set is recommended. For specialized fields, still other needle sets are illustrated on pages 27, 28, 29 and 30.

Like all other methods in the practice of medicine or surgery, one cannot expect uneventful, 100% perfect "cures" in employing electrodesiccation or coagulation in the cases hereinafter mentioned. However, in all of the cases mentioned, a reasonable number of authorities have recommended electro-surgery as the method of choice.

OPERATING INSTRUCTIONS FOR THE HYFRECTOR

NAME Hyfrecator is a coined name, a trade mark registered to the Birtcher Corporation, derived from "High-frequency" and "Eradicator." The Birtcher Corporation introduced it to the Medical profession in 1938 and it was welcomed enthusiastically: Over 200,000 Hyfrecators have since been put into daily use. Uses for it have been found far in excess of the original expectations.

CURRENT VOLTAGE FREQUENCY The Hyfrecator is essentially a small, spark-gap diathermy. Its frequency is approximately two and one-half million oscillations per second. It is designed to operate on 50-60 cycle A.C. current at 110 Volts. For any other voltage or frequency, a special Hyfrecator can be furnished at a slightly higher cost. If Direct Current is to be used, a small D.C.-A.C. Converter is available (Birtcher No. 707 Converter).

EQUIPMENT Standard equipment consists of line cord (attached), one Birtcher-Built No. 790 Foot Switch, one No. 711 Handle and Cord with two Stainless Steel Needles. For Bi-Active Coagulation the Birtcher-Built No. 789 Set is available. (See page 29.)

MOUNTING For wall mounting (which is recommended) a special screw is provided. For greatest convenience, mount the Hyfrecator on the wall directly above the floor receptacle from which the current is to be taken. Insert the screw firmly into the wall so that about $\frac{1}{4}$ inch is exposed and hang Hyfrecator by small catch provided in the back plate.

ASSEMBLY Foot switch plug should be inserted into female plug attached to the line cord. Insert line cord into electrical outlet. Hyfrecator is now ready to operate. Depressing Foot Switch activates the Hyfrecator for all technics.

OUTLETS Desiccation and Fulguration by use of the 711 Handle and Needle is secured by plugging the cord terminal into either the Red or White outlets on the front of the Hyfrecator. The White terminal outlet is used when light power is desired; the Red outlet when greater power is desired. The Green terminal outlets are to be used for Bi-Active technics only.

DIAL The dial on the front of the Hyfrecator controls the intensity of the current. Turning it clockwise (from 0 towards 100) increases the power at all terminal outlets, Red, White or Green. For light work, use the White outlet. For heavier work use the Red outlet. For Bi-active coagulation, the two green outlets. For intensity, adjust dial to requirements.

TESTING Take coin or any small metal object in the left hand; 711 Handle with coarse needle in right hand. Place terminal in White outlet; dial set just above O. Depress Foot-Switch and apply spark from needle to coin. Note intensity. Adjust dial clockwise and note increase in intensity. Repeat process, using Red outlet. Note that no electrical sensation is felt. Your Hyfrecator is now ready for use. (See "Experiment" paragraph.)

TERMS Desiccation — when the needle is in contact or inserted into the tissues.

Fulguration — when the spark is allowed to jump across a gap onto the tissues.

Coagulation — a Bi-Terminal method — where heat in the tissues is created to actually coagulate either mildly or to the point of complete destruction.

EXPERIMENT Procure a 1/4-lb. piece of lean beef or veal — *fresh and moist*. Allow it to warm up to room temperature, to more nearly simulate body temperature. Cold meat shows much retarded action. Hold meat in the left hand or lay it on table and touch it with left hand. The small piece of meat has very little electrical "capacity" but by holding or touching it, it gains the capacity of your body. Thus you will reproduce the actual conditions as when working on a patient.

Fulguration — Using the White and Red outlets in turn, bring the needle point near but not touching the meat. Use various Dial settings and observe the different degrees of Fulguration which you may produce. Short spurts of spark, with a short period between for cooling, are more acceptable to the patient. Continued application of the spark tends to create heat, which may become intolerable. Cut meat open at Fulgurated spots to observe depth of action.

Desiccation — Use thin needle. Insert into meat not over 1/8 inch and turn on current for one to five seconds. Dial different intensities on both the White and Red terminals. Cut meat open with a scalpel and observe depth of action. A mild blanching of the tissue is all that is desirable for most conditions. If greater action is desirable, then bi-active coagulation is to be used. Repeat above, but merely touch needle point to the meat surface and observe results.

A fine needle is better than a coarse one for Desiccation. A longer period of current application, increases the action of the current.

Coagulation — When complete destruction of tissue is desired, special Bi-active electrodes are needed. (See pages 29 and 30 for complete description.) Instructions for use accompany them.

SCAR In Fulguration of small growths such as warts, moles, etc., a shallow destruction is accomplished. No dressing is needed but the patient should be instructed not to scratch off the scab but to let it drop off by itself. Usually, after the slough, a new shiny-looking skin appears which after a short period takes on the appearance of the surrounding skin.

ANESTHETIC For small growths, no anesthetic is needed. On mucous membrane, topical application is effective — novocain, nupercain, butyn or 10% cocain. Direct injection into the field is to be avoided. Infiltrate around the field — nerve block, preferable. If general anesthesia is to be used, special instruction should be secured. NEVER USE ETHYLENE.

DIRECTIONS FOR ADJUSTING HYFREATOR

If for any reason the Hyfreator becomes out of adjustment, accurate re-setting may be accomplished as follows:

1. Plug the line cord of the Hyfreator into the A.C. current supply and attach Foot Switch just as if you were going to use the instrument.
2. Step on the Foot Switch and observe if green signal lights up, thus proving current is reaching Hyfreator properly.
3. Turn operating dial counter-clockwise to extreme left, or zero (o) reading on dial.
4. On the side of the dial knob you will observe a small hole with a set-screw in the bottom. With a very small screwdriver, loosen this set-screw and remove the knob-dial assembly . . . it lifts off the shaft easily.
5. With the Foot Switch depressed . . . current on . . . turn the control shaft to the left until the buzzing sound of the sparkgap becomes inaudible. This means the gaps are entirely closed.
6. Now turn the shaft slowly to the right . . . clockwise . . . until the buzzing of the sparkgap is just audible by placing the ear close to the Hyfreator case. This represents the minimum and finest setting of the instrument.
7. To test the setting, plug the cord and handle into the Red terminal outlet. Holding a coin or piece of metal in the left hand, touch the needle against the metal . . . of course, with the current on . . . and observe if there is a tiny spark at the point. Just a faint spark is required. Your Hyfreator is now adjusted properly.
8. Replace the control knob on the shaft in the extreme left position with the pointer in the zero (o) position; press knob lightly against felt washer; tighten the set-screw firmly. The adjustment is now complete.

"ELECTRODESICCATION"

DEFINITION:

Electrodesiccation is a dehydration process rupturing the cell capsule and transforming it into a dry mass. For this purpose a needle point electrode is employed. The electrode may be inserted slightly into the tissue or held one-eighth of an inch or so away from the tissue permitting the high-frequency spark to spray on the tissue immediately in front of the needle point. In either case, mild heat, sufficient to dehydrate and thereby destroy the tissue immediately adjacent the needle point, is created.

APPLICATION:

The area and depth that may be desiccated with one application is dependent upon several variables; first, the current intensity; second, the length of time current flows; third, the density and moisture content of the tissue; and fourth, the distance that the electrode is removed from the part under treatment, or, if the needle is inserted into the tissue, the surface area of the electrode. It is well to keep in mind that when making application with the needle inserted, the current intensity and the time allowed must both be increased in direct proportion to the increase in the diameter of the needle and the depth of insertion. In other words, a needle of larger diameter inserted to a depth of $\frac{1}{8}$ " requires roughly twice the current and twice the time to produce the same effect as would be produced by a needle of half the diameter inserted to but half the depth. Obviously, a very fine needle is desirable when it is desired to penetrate the growth to a considerable depth.

EFFECTS:

As the high frequency energy is administered the tissue surrounding the needle is dehydrated and takes on a blanched, arid appearance. Heavy destruction blackens tissue. After slough of destroyed tissue new skin is formed.

HISTORY:

William L. Clark, M.D., of Philadelphia, pioneer in Electrosurgery, is generally credited with the first experiments in America in electrodesiccation, and began his first work prior to 1910. Dr. Clark's great work was stimulated by E. C. Titus of New York and it seems European investigators were working along the same lines with the same splendid results. Dr. Clark was probably the first in this country to remove large growths both benign and malignant, extensive epitheliomata, angiomata, pigmented nevi of the skin, and extensive malignant lesions of the oral cavity and throat, and to perform amputation of tongues, resection of jaws, etc. Dr. Clark is credited with the creation of the term "desiccation."

HEALING:

Healing is usually complete in from one to three weeks after electrodesiccation by granulation beneath the scab, followed by epithelization and granulation. The scar, soft and pink at first, gradually fades out.

ADVANTAGES:

Most authorities agree that the advantages of electrodesiccation are:

1. Rapid and effective destruction of abnormal growths without loss of blood.

2. Precision. Considerable area of tissue may be destroyed without infringement on normal tissue.
3. Normal cells are left intact.
4. Sterilized wound results.
5. The blood and lymph channels are sealed, which lessens the likelihood of metastasis in malignant cases.
6. The cosmetic result is usually excellent.
7. There is practically no after-pain.
8. Anesthetic is usually not required on small growths.
9. The application is rapid and very quickly accomplished.

POST-OPERATIVE CARE:

Small benign moles and warts need no dressing after desiccation. Larger tumors call for antiseptic dressings until the slough has separated and the wound is epithelized. Kelly and Ward recommend a 2% solution of gentian violet in 10% acetone, 50% alcohol, and 40% water, be used frequently for the first week or 10 days until the slough has separated and granulation has developed. As in any surgical methods, large open wounds should be carefully protected against secondary infection. An antiseptic powder, such as 3% ammoniated mercury in talc, is an excellent local application. Every effort should be made to prevent premature removal of the crust.

BI-ACTIVE COAGULATION

Electrodesiccation and fulguration have offered to the physician a wide range of minor surgery that may be practiced in general office procedure. The removal of minor superficial growths and blemishes is a wide field of usefulness of high frequency currents. There is, however, a class of conditions where the relative lighter currents are inadequate to perform the work required.

Where the tissue to be removed or destroyed by the current is vascular or of larger mass, desiccation is insufficient. Here, electrocoagulation steps in to provide the simple procedure necessary to handle the accessory problems that appear.

For electrocoagulation, current of relatively lower voltage but of somewhat higher amperage is required. The principle used is to create in the tissue mass a temperature sufficiently high to cause coagulation of the protein of the cells, thus ending their life as active cells. They are then sloughed off by the body, leaving behind a simple wound to heal.

The early use of coagulation was developed by the use of a single needle inserted into the tissue with a dispersive electrode placed elsewhere on the body. The current then concentrated at the needle area to the point where coagulation was secured. The disadvantage of this method, as appeared in use, was that control was difficult. Currents that concentrated in the tissue

mass that was to be removed, sometimes became greater than the operator intended. Stray currents were often allowed to cause coagulation in the deeper tissues underlying the growth to be removed.

The bi-active method was evolved to remove this hazard. By this method, two needles or electrodes lying adjacent and parallel are installed in a single instrument. Both of these needles are activated by the low voltage current. When these two needles are inserted into a growth or tissue mass, the current is restricted to flow merely between the two needles. The tissue lying between the needles only is therefore subject to its action. Thus the uncertainties in its use are eliminated.

Therefore, the use of bi-active coagulation in the hands of the less experienced operator becomes a safer technic. By its use, growths of larger mass as well as those more vascular are destroyed by bi-active coagulation without fear that deeper tissue may be involved. For by the use of the bi-active method, one can be more certain of the area that comes under the influence of the current.

This fact makes it possible to do coagulation of the cervix and cervical erosion as an office procedure, as well as the coagulation of tonsils, tonsillar tags, hemorrhoids, angiomas and similar growths. The method is simple of understanding but what is more important, it is so easily controlled in its application that dangers of over coagulation are minimized.



Illustrating effect of desiccating current with needle inserted.



Illustrating effect of desiccating current with needle held slightly away from tissue.



Illustrating electrodesiccation of growth with pedicle.

NOTE! — When practicing Electrosurgery on Dead Animal Tissue, a better simulation of actual conditions will be secured by holding the experimental tissue in the hand and having it at, or near, body temperature.

"ELECTRODESICCATION IN SKIN DISEASES"

Electrodesiccation finds its largest field of usefulness in benign and malignant lesions of the skin. Small growths will not require an anesthetic excepting with an extremely nervous patient. *

ANESTHESIA:

A 1% to 2% novocain solution is sufficient in treating benign and malignant tumors up to approximately 2 cm. in diameter. Personal experience must be the best guide in this respect. Hypodermic anesthetics should be infiltrated around the lesion rather than directly into it.

INFECTIONS:

Pyrogenic skin infections varying from acne pustules to large carbuncles are effectively treated by electrodesiccation. Insert one-sixteenth inch of the finely pointed needle tip in each acne pustule, depress footswitch for a fraction of a second, just enough to blanch the tissue.

VERRUCA (Wart):

Under this is included all types excepting venereal warts (see Chapter on Urology). On the small flat warts, the spark from the needle point may be applied over the entire surface of the growth until it is blanched. After the slough, one may redessicate lightly any wart tissue left. A larger wart with a pedicle, should be treated as follows: Use a small diameter, sharpened needle point and insert it in the base of the pedicle one-sixteenth inch turning on the current just long enough to blanch the tissue around the needle point. Circle the pedicle with several similar punctures.

KERATOSIS:

Senile keratosis, often considered as precancerous lesions, may be quickly removed by desiccation. The technique is exactly the same as with a wart with a pedicle. In these cases, one should be sure that the entire lesion has been completely destroyed in one sitting. In larger growths desiccate thoroughly, then cut away most of the dehydrated mass with scalpel or scissors and redessicate to a greater depth.

KELOID:

Thoroughly desiccate the entire growth as in senile warts. Some authorities recommend treatment by X-ray immediately following desiccation. Most authorities warn against traumatism in these cases. Grover claims the chances for return are minimized when the scar tissue is completely destroyed by electrosurgical means. Kovacs insists that X-ray or radium is essential at the first sign of reappearance of the growth.

VERRUCA VULGARIS:

Mild desiccation of the surface will usually cause disappearance of the wart without a scar in a few weeks.

VERRUCA PLANTARIS:

Thoroughly desiccate the surface shell of the wart and redessicate the base and edge. Healing will take place in a few weeks.

* Special attention is called to the article, "Curettage and Electrodesiccation in the Treatment of Skin Cancer," by Knox, et al, in *Archives of Dermatology*, August, 1960.

VERRUCA ACUMINATA (Condyloma-Acuminatum):

If there is considerable area involved, desensitize. Desiccate each small wart superficially, remove the desiccated lesion with a curet, then lightly desiccate the wound. (See also Venereal warts.)

WARTS — MISCELLANEOUS (VERRUCA):

Electrodesiccation is recommended by MacKee in the "Handbook of Physical Medicine" of the American Medical Association for all of the common warts, scalp warts, flat type warts on mucous membranes of the lips, tongue, cheek, penis, vulvae, and mucocutaneous juncture of the eyelids. Digitate warts and Filiform warts are readily treated with light desiccation.

KERATOSIS SEBORRHOICA:

It has been suggested that these lead to basal cell epithelioma. Thoroughly desiccate the growth including light desiccation on the normal skin around the periphery of the lesion.

KERATOSIS SENILIS:

It is claimed that this condition is a forerunner of epidermoid cancer. Thoroughly desiccate the entire surface, then remove dehydrated tissue with curet or scissors and redesiccate the wound. If the growth is thick or elevated, and one suspects a prickle cell epithelioma, more thorough desiccation is required followed with X-ray treatments. Desiccation should include some of the apparently normal tissue surrounding the lesion.

NEVOID KERATOSIS:

The technique is the same as Keratosis Seborrhoeic.

KERATOSIS MISCELLANEOUS:

Treat the same as Senile Keratosis. Pain and slower healing may be expected after desiccation on the feet. Relieve any desiccated area on the feet with dressings and avoid pressure.

X-ray and Radium Keratosis of a small nature respond to desiccation. Xeroderma Pigmentosum responds to desiccation under the techniques given for Seborrhoeic Keratosis.

TUBERCULOSIS OF THE SKIN (Lupus Vulgaris):

Small nodules can be desiccated in a few seconds by allowing the spark to play on the surface, or the needle may be inserted one-sixteenth inch into the growth. At times, larger patches of Lupus respond to the same method.

TUBERCULOSIS VERRUCOSA CUTIS (Verruca Necrogenica):

This may be permanently and easily destroyed by electrodesiccation. In larger areas desiccate thoroughly, remove the destroyed tissue, then redesiccate.

SARCOID:

Desiccate as Tuberculosis Verrucosa.

MISCELLANEOUS CUTANEOUS TUBERCULOSIS:

Individual small nodules may be treated as per the technique given for Lupus Vulgaris. They are also successfully treated with X-ray.

VASCULAR NEVI
NEVUS ARANEUS
ANGIOMA
HEMANGIOMA

NEVUS FLAMMEUS (Port wine mark, strawberry mark):

Small lesions of all of the above may be treated satisfactorily with light desiccation. Excepting for the quite small lesions, scar may be expected. Whereas all of the foregoing have been treated successfully by electrodesiccation, it is only fair to state that recently investigators have reported more successful results with radium as there is less tendency to scar. If scar is not objectionable, mild desiccation below the skin surface may be employed.

CAVERNOUS ANGIOMA:

Electrodesiccation may be used satisfactorily for small lesions, using a fine needle. Insert needle a few millimeters making several insertions. Radium is also recommended.

SENILE ANGIOMA:

Superficial desiccation is recommended, blanching the surface with the electric spark with the needle point held one-sixteenth inch away from the tissue.

ANGIO KERATOMAS:

Desiccation is recommended. Use the same method as Senile Angioma.

LYMPHANGIOMA:

The superficial type can be destroyed readily by electrodesiccation with the same method as Senile Angioma.

Ordinary common moles probably need no attention excepting for cosmetic purposes. They may be removed by light desiccation using the spark from the needle point. Very dark, blue-black moles should be radically destroyed, inserting a fine needle deep in the tissue and destroying some of the normal tissue around the mole.

MOUSE-SKIN MOLES:

Readily destroyed by simple desiccation with the needle point one-sixteenth inch away from the growth.

*** FLAT PIGMENTED NEVI:**

Light brown ones may be destroyed with light desiccation. Slate gray, black and blue-black, may develop into Sarcoma as result of trauma. It is considered wise to destroy them. Thorough desiccation extending beyond the periphery and down into the underlying muscle is indicated.

MISCELLANEOUS NEVI:

Nevus Unius Lateralis or linear birth mark, or hairy nevus may be treated by desiccation. Cerebriform nevus may be treated by desiccation being sure that every cell is destroyed. Papillary Nevi may be destroyed by desiccation using a very fine needle point.

*** Suspect lesions should be biopsied. Depending upon size and extent of invasion, electro-surgical excision by means of cutting current may be indicated.**

DERMATITIS PAPILLARIS CAPILLITII (Acne Keloid):

When the Keloid is large, it can be surgically removed to the level of the skin, then thoroughly desiccated, and the wound treated with X-ray. An electrosurgical cutting current is desirable for removal of a large growth.

CLAVUS (Corns):

A fine needle inserted within the anesthetized corn activated with a high-frequency current will desiccate this painful growth. One application is usually sufficient. If the corn is sizeable, it may be removed with forceps after desiccation. Avoid strain on the foot and pressure against the desiccated area during the healing process.

FIBROMA:

Small pedunculated Fibromas are destroyed by desiccation. Desiccate lightly.

GRANULOMA PYOGENICUM:

This readily responds to desiccation. Treat lightly with a desiccation spark.

ADENOMA SEBACEUM:

Each papule may be treated by desiccation using a mild current and a fine needle point.

SEBACEOUS ADENOMA:

Readily treated by desiccation using a fine needle point in each gland.

MULTIPLE BENIGN CYSTIC EPITHELIOMA:

Each papule should be destroyed by delicate desiccation using a fine needle point. There may be a slight scar.

CYSTS:

Cysts of the lip, Sebaceous cysts, may be destroyed by electrodesiccation. First surgically open the cyst, drain, and insert the point of a fine needle and desiccate the wall of the cyst thoroughly. If the wall is not destroyed thoroughly, the cyst may reappear.

HYDROCYSTOMAS:

They are readily destroyed by simple, light desiccation.

FURUNCULUS (Boils):

Boils and carbuncles in the early stages can be aborted usually by inserting the point of a fine needle in the central follicle and desiccating mildly for perhaps a second or two. Some have observed that in a case of numerous boils, one single boil when treated by desiccation will apparently abort the development of other boils already throughout the body. It has been claimed, that the autogenous vaccine reaction due to the absorption of the cooked pus in the treated boil is responsible.

ROSACEA AND RHINOPHYMA:

A fine needle point inserted slightly into the cutaneous vessel activated with a mild desiccating current will bring about pleasing results. Hypertrophic Rosacea may be treated in the same way. The nodules in Rhinophyma may be first excised, then the wound thoroughly desiccated.

DILATED CUTANEOUS CAPILLARIES:

Delicate desiccation with a fine needle point brings about excellent results. Too heavy desiccation may result in a slight scar.

*** BASAL CELL EPITHELIOMA:**

This condition may be cured permanently with thorough and heavy desiccation, being sure to destroy all the cells of the growth and some of the immediately surrounding tissue.

*** SQUAMOUS CELL EPITHELIOMA:**

If recognized early, before metastasis has occurred, heavy desiccation may be employed using several insertions of a fine needle point, being sure to destroy the entire growth.

*** MELANOMAS AND MALIGNANT SARCOMAS:**

Treat like a Squamous Cell Epithelioma.

NOTE: Malignant Neoplasms should not be desiccated by a physician who is not skilled in diagnosing these conditions. A colleague should be consulted for guidance in desiccation or other methods in treatment of these conditions. Pre-desiccation Biopsy should be routinely practiced.

CARBUNCLE:

During the early stages insert a fine needle point with mild desiccation. After ulceration, X-ray has been recommended. The reaction by desiccation, it has been claimed, is similar to that with boils.

TATTOO MARKS AND POWDER AND COAL MARKS:

These may be removed by desiccation. Each small area is desiccated with cross lines one-eighth inch apart. Use the spark lightly to dehydrate and whiten the skin. The dehydrated skin is scraped away and the desiccated surface macerated for 3 days with salt water solution. The pigment is removed by a curet. In desiccating, one should be careful to dehydrate the epidermis only, avoiding damage to the true skin. This technique is recommended by Grover.

"ORAL CAVITY"

Electrosurgery, it is claimed by a number of authorities, is superior to classic surgery, X-ray, or radium irradiation in benign and malignant lesions of the oral cavity. There is usually a quick disappearance of the slough, rapid, healthy granulation without fibrosis and with painless healing.

PREPARATION:

Small lesions such as benign papilloma and leukoplakia do not require preparatory care aside from thorough cleansing of the mouth.

POST-OPERATIVE CARE:

Clark recommends topical applications of 1% Hypochloride solution once or twice a day plus washing of the mouth with a simple Dobell's solution several times daily. In fairly extensive lesions, food must be limited to liquids by tube.

*** Suspect lesions should be biopsied. Depending upon size and extent of invasion, electro-surgical excision by means of cutting current may be indicated.**

ANESTHESIA:

A topical anesthetic carefully applied to the mucous membranes is satisfactory for small lesions. For larger growths, 1% Procain with Adrenalin has been recommended. For more extensive growths, a general anesthetic with one of the non-explosive agents is recommended.

PAPILLOMAS:

For the shallow growths, merely desiccate with the spark on the surface until the tissue is whitened. For larger growths insert a fine needle point several times within the base of the growth and desiccate until growth is thoroughly dehydrated. Dehydrated tissue will slough in 5 or 6 days.

CYSTS:

Small cysts of the mouth may be treated by inserting a fine needle point directly in the cyst. A few seconds' application of the desiccating current will boil out the mucous fluid and destroy the lining membrane.

RANULA:

In the sizeable Ranula thorough anesthesia is required. The cyst is laid open its entire length with scalpel and the exposed epithelial lining is then thoroughly desiccated with a strong desiccating current until all bleeding has stopped, and the whole interior of the sac appears very white. Healing takes place in 10 days to 2 weeks.

HEMANGIOMA:

These cases respond to radium treatment, and radium is particularly desirable if there is a Sarcoma association. If radium is not available, electrodesiccation is suitable. In lesions up to 2 cm. the growth is merely desiccated thoroughly with a fine needle entered into the growth. In larger lesions, preliminary ligation of blood vessels to the growth has been recommended, after which a fine needle point is inserted at various points and the area thoroughly desiccated until the growth and the immediately surrounding tissue has become whitened. If there is Sarcoma association, most of the desiccated tissue may be removed with scissors or scalpel to lessen the amount of post-operative sloughing. There are usually good functional and cosmetic results.

*** CARCINOMA:**

Superficial growths are destroyed with a strong desiccating current. The deeper growths require several insertions of a fine needle point at various places, and the entire mass thoroughly dehydrated and devitalized. The dehydration should involve considerable normal tissue around the growth. Following, scalpel may be employed to remove most of the destroyed tissue. After healing has taken place, plastic surgery may be desirable.

*** PRICKLE CELL EPITHELIOMA:**

Treat as Carcinoma of the Lip.

*** Suspect lesions should be biopsied. Depending upon size and extent of invasion, electro-surgical excision by means of cutting current may be indicated.**

*MALIGNANCIES OF THE UPPER JAW:

Small growths should be desiccated thoroughly in the same manner as Carcinoma of the Lip. Here, however, sizeable growths usually become highly involved, and the use of electrosurgical cutting currents with coagulation is indicated in preference to simple desiccation.

"UROLOGY"

Desiccation-fulguration of various growths within the male and female bladder has long been established as a technique with Urologists everywhere. This method is employed using a cystoscope, requiring the continual flow of water. Due to the large dissipation of the electrical current in the water, a more powerful current than that provided in the small, compact Hyfrecator must be used.

CHANCROID:

Spirochaeta Pallida should first be ruled out before any treatment is instigated. One method recommended is that a 25% solution of copper sulphate in distilled water be applied to the sore for a few minutes. Then the desiccation needle is applied to the border of the ulcer, then the center of the lesion is desiccated in the same manner. Very thorough desiccation is required and should be extended well outside of the ulcer. The sharpened needle point in all applications is inserted at many points in the tissue. The treated area is dressed with an antiseptic dressing, and in the event of recurrence, the procedure is repeated.

VENEREAL WARTS AND OTHER SMALL POLYPOID TUMORS:

The parts are made insensitive with an antiseptic. A sharpened, fine needle point is inserted into the base of the growth and short intermittent applications of the desiccating current are applied until the base of the growth is mildly blanched. Leave the desiccated tissue in position. Epithelization takes place beneath it. Healing is complete in 2 weeks.

*MALIGNANT TUMORS OF THE PENIS:

Thorough desiccation at the base of and beyond the margins is indicated. The desiccated tissue may now be cut away, and the area redesiccated. Thorough anesthetic is required. This primarily applies to growths not exceeding 2 cm. (See Kelly and Ward "Treatment of Carcinoma of the Penis with Endothermy with a method of treatment of Metastatic Malignant Lymph Glands."—Surgery, Gynecology and Obstetrics XLII, 5, 1926.)

PRURITUS:

(See Pruritus Vulvae under the Chapter on Gynecology and treat accordingly.) (Also see Pruritus Ani.)

* Suspect lesions should be biopsied. Depending upon size and extent of invasion, electrosurgical excision by means of cutting current may be indicated.

IMPOTENCE:

Impotence due to infiltrated verumontanum may be corrected by mild desiccation. The infiltration may be dissipated by drying up the field of operation by first applying pledgets of cotton and then applying the light spray of the desiccating current for a few moments. One should be careful not to overdo the operation. A hard, rubber Urethroscope should be used.

"EAR, EYE, NOSE AND THROAT"

TONSILS:

Whereas Clark and a number of others have for years performed and recommended removal of tonsils in a selected number of cases by electro-desiccation, in recent years, the preference by most has been the classical tonsilectomy followed by desiccation of small remaining tags only. Tags may be desiccated by first applying a topical anesthetic to the tissue and dehydrating by insertion of a finely sharpened needle point. The needle point may be inserted one or more times, according to size of the tag, at its base, taking care that the blanching of the tissue does not spread beyond the base of the tag. Bi-active coagulation is also frequently employed for removing tonsil tags. (See section in Bi-Active Coagulation.)

TONSIL STERILIZATION:

A number of physicians believe that in selected cases, the pus pockets of chronic infected tonsils may be sterilized by desiccation or coagulation merely to destroy the infection of each pus pocket just like one were desiccating in a small cyst. This method seems to sterilize the tonsil, and avoid the necessity of tonsilectomy but may require treatments periodically. In this, too, care must be exercised to avoid desiccation beneath the tonsillar capsule.

NASAL POLYPS:

A flexible insulated needle can be used to desiccate polyps at the base. (See insulated needle illustrated with the Universal Needle Set in back of this booklet.) Some operators have recommended using the electrosurgical cutting current activating a snare about the base of the polyp.

TUMORS OF THE NASOPHARYNX:

(See detailed electrosurgical technique as given by Lee M. Hurd in February 18, 1941, issue of the *Medical Journal of Records*.)

TUMORS OF THE EAR:

Clark recommends that external Epitheliomas, etc., be thoroughly desiccated, inserting the sharp needle point several times. Follow by radium.

CORNEAL ULCERS:

For treatment of Pterygia, corneal ulcers, epithelioma of cornea, etc., see the following:

Matthew F. C. Zubak: Electrocoagulation of Pterygia,
Arch. Ophth. 5:732 (May) 1931.

ENTROPION:

Each nodule is treated by insertion of a very fine sharpened needle point activated with a delicate desiccating current. Xanthoma Palpebrarum is

treated in much the same way with the desiccation sufficiently deep to reach the pigment deep in the skin. It is recommended that only a small portion be treated at each sitting.

CHALAZION:

The area is anesthetized, the lid everted, the cyst incised and evacuated. The entire lining is thoroughly desiccated with a mild desiccating current.

TUMORS:

Basal cell epithelioma may be treated successfully with desiccation. With the current accurately controlled, even growths involving the inner and outer canthus can be removed with minimum scar and distortion. A very fine needle point is used in the operating handle. The spark is sprayed over the surface of superficial growths. In the deep-seated growths, the sharpened needle may be inserted. After the tissue has been dehydrated, that destroyed tissue may be cut away, reapplying the current as necessary. Irrigation of the conjunctival sac is recommended with a warm boric solution several times daily. A 1% or 2% mercurochrome solution may be used as a dressing.

GRANULAR PHARYNGITIS:

Each granular point is readily desiccated with a fine needle, activated with a mild desiccating current. Suitable instruments must be employed to reach the involved area.

CONJUNCTIVITIS:

Thoroughly anesthetize the area. A very fine needle point is employed. Bring needle point in contact with each granular point, depress footswitch momentarily. A mild current is used. Operator may pre-test the amount of destruction by bringing the needle point to the back of his own hand. Larger nodules will require a stronger current. Treat a limited area only at one sitting to avoid too much post-operative discomfort. Boric acid solution as an after treatment is indicated, and 3 days after desiccation, ointments with a copper base have been recommended. If there is any recurrence, desiccation may be employed again.

SUPPURATIVE KERATITIS:

(See treatment for Corneal Ulcers.)

EPISTAXIS (Nose Bleed):

The needle point activated with a desiccating current may be brought in contact with the ruptured arteriole. Light desiccation will stop bleeding. A topical anesthesia precedes the desiccation. Be careful not to injure surrounding mucous membranes. The No. 740 E.N.T. Desiccation Set (with suction) is recommended for this work, as the blood and smoke can be aspirated and the bleeder readily identified.

TURBINATES:

Reduction of the inferior turbinates may be accomplished by dehydration with a desiccating current. A very finely pointed and properly insulated needle is employed, No. 794-A. (See illustration of recommended needle in back of this booklet.) It is desirable to bring about dehydration of tissue below the mucous membrane and to avoid destruction of mucous membrane and subsequent "dry nose." The nasal chamber is rendered insensitive by top-

ical anesthetic. The sharp needle point is inserted into the head of the turbinal body at about the center and pushed about one-half way to the posterior part. The current is turned on with the footswitch for 8 seconds. The length of time required for the current to flow and the amount of energy required must be in keeping with each operator's judgment. By experimentation, the operator may desiccate using the same electrode within a piece of moist, fresh liver. He may then cut open the liver observing the amount of tissue mildly blanched along the path of the needle point. This amount of dehydration may be duplicated by setting the control dial of the machine in exactly the same position and inserting the needle point exactly the same length within the turbinate. After the needle is inserted in the turbinate, the insulation may be pushed forward to protect against sparking from the sides of the needle to immediately adjacent mucous membrane. Microscopic examination of the liver used experimentally, will show shrinkage of cells of tissue considerably beyond the discernible blanched tissue. No special after-treatment is required.

TONSIL AND TAG BI-ACTIVE ELECTROCOAGULATION

With the bi-active technic, a simple procedure is available for the coagulation of tonsillar tissue. Because the current used in this method is confined to and near the needles, the danger of burning the pillars, uvula or tongue is reduced to a minor consideration. Also, too deep penetration into the base or capsule need not occur as the current is under closer control.

The technic lends itself to those cases where the patient refuses surgery or where it is inadvisable for other reasons. Since it is an office procedure and does not confine the patient to his bed, it becomes attractive to those adults who are not able to take time out from their daily duties, or where expense involved is too great.

Where there is any lesion in the body which is secondary to the tonsillar infection, such as arthritis, neuritis, high blood pressure, certain heart cases, etc., it becomes the method of choice. It is so considered because of its safety value as well as for the reason that the coagulation of the infected area sets up the autogenous vaccine or reaction which has very beneficial effect upon the constitutional symptoms arising from absorption from the infected tonsils. It is claimed by many that the autogenous vaccine reaction is by long odds the most important reason for coagulation. Results are quite positive and speedy often showing up after the first or second treatment.

Post-operative tonsillar tags, lymphoid hypertrophy or regenerated tonsillar tissue offer an attractive field for the use of bi-active coagulation.

Tonsils can be as cleanly removed by this method as by surgery. An operator who would do a clean job surgically, would also do a clean job by this method. Charges of incomplete removal should be charged to the operator and not the method.

Actually, it seems to be a moot question as to the importance of complete removal by this method. This much can be said, that an incomplete removal of tonsils by coagulation is likely to give the patient as good general physical results as complete removal. This is not true surgically as there is no sterilization of the remaining portion, and none of the autogenous vaccine reaction.

This method is not recommended for the young or the hypersensitive throat.

TURBINATE HYPERTROPHY (Bi-Active Electrocoagulation)

Dependable sources report that reduction in size of the body of the inferior turbinate is best accomplished by submucous coagulation with the double needle electrode used. The needles are inserted into the tissue under local anesthesia and a delicate current is passed from one needle to the other. Shrinkage quickly ensues which reduces the hypertrophy with minimum damage to the turbinate mucosa.

HYPERTROPHIED AND INFECTED LYMPHOID TISSUE (Bi-Active Electrocoagulation)

HYPERTROPHIED ADENOID REMNANTS (Bi-Active Electrocoagulation)

Bi-active coagulation has been well recommended for both of the above conditions. It lends itself well to both, being a simple office technic. A double needle electrode is used. The needles are inserted into the tissue under visual guidance and a mild current is passed to slowly coagulate an area of several millimeters in diameter. Small areas may be done under local anesthesia, not too great an area at one time. The process may be repeated at intervals until hypertrophy is destroyed.

RETINAL DETACHMENT

Under the guidance of the late Harry J. Hoare, M.D. the Birtcher Corporation designed a bi-terminal electrode set to be used for this purpose. This set consists of a handle, ring electrode and two Gradle type needles, contained in a compact carrying case, catalog No. 721 Retinal Detachment Set.

Precise instructions can be obtained from the Birtcher Corporation upon request.

GLAUCOMA:

Paul Hurwitz, M.D. has designed a cyclodiathermic procedure for the treatment of Glaucoma in the office. The Birtcher Corporation has fabricated an especial set to his specifications.

The set consists of a handle, ring "Indifferent" electrode and two curved needles in a handsome bleached wood carrying case, catalog No. 722 Glaucoma Set.

A copy of the reprint appearing in "The Eye, Ear, Nose and Throat Monthly," outlining the technic is available upon request.

"GYNECOLOGY"

*** ELECTRODESICCATION FOR TREATMENT OF NEVI, WARTS, SEBACEOUS TUMORS, AND FIBROMAS, ETC., OF THE LABIA AND CLITORIS:**

Desiccation of superficial growths as above is readily accomplished by spraying the spark over the surface, blanching each growth. In larger growths, the needle should be inserted at several points around the base desiccating the growth until it is thoroughly dehydrated. Pigmented nevi should be desiccated thoroughly with a fairly wide margin of normal tissue around the growth included. Growths with a pedicle need to be desiccated thoroughly at

*** Suspect lesions should be biopsied. Depending upon size and extent of invasion, electro-surgical excision by means of cutting current may be indicated.**

See special electrodes illustrated on pages 27, 28, 29 & 30

the base only. Small (up to 2 cm.) malignant tumors may be treated in the same way allowing, however, a wide margin around and below the growth. In the larger growths, scissors may be used to cut away the desiccated tissue after which the area may be thoroughly redesiccated.

PRURITIS VULVAE:

Thorough desiccation playing the spark over the surface with a strong current brings about excellent results. In very aggravated forms, excess desiccated tissue may be cut away. (See also Pruritus Ani.)

KRAUROSIS:

Treat as Pruritus.

CHANCER:

CHANCROID:

VENEREAL WARTS:

The above diseases are desiccated out of existence by inserting a sharpened needle point in the base of the growth, desiccating thoroughly with a heavy current. The sharpened needle point is inserted at several points, the foot-switch depressed until the entire mass has become thoroughly whitened. The entire area is, of course, first anesthetized.

***CARCINOMA:**

Small nodules and lumps of a malignant nature may be thoroughly desiccated as malignancies mentioned under "Skin Diseases." Massive involvements, however, involving both labia and extending to and around the clitoris call for more thorough electrosurgical extirpation with Electrosurgical cutting current.

BARTHOLIN'S GLANDS:

An abscess or cyst is treated by simple incision, thoroughly evacuating the contents. The needle point may then be placed in the cyst, and the entire lining of the sac destroyed by thoroughly spraying with the high-frequency desiccating spark.

SKENE'S GLANDS:

The sharpened needle point may be inserted in an abscess or cyst up to the size of a lima bean, and the growth sterilized with a strong desiccating current. The wound closes by granulation.

URETHRA:

Benign vascular tumors in urethral orifices are readily destroyed by desiccation as though they were a similar growth on the surface of the body. Treatment, however, should be thorough.

(For more extensive lesions of urethra, see O'Connor, V. J.: "Primary Carcinoma of Female Urethra." *Journal of Urology* XII, 1924. Also "The Uses of Desiccation Surgery in Gynecology," William L. Clark; *American Journal Obstetrics and Diseases of Women and Children*, LXII, I, 1931.)

*** Suspect lesions should be biopsied. Depending upon size and extent of invasion, electrosurgical excision by means of cutting current may be indicated.**

URETHRAL CARUNCLE:

Readily desiccated using a fine needle point buried in the tissue if the growth is not more than 2 cm. Blanch the tumor thoroughly, follow with irrigation with hot boric solutions.

VAGINAL CYSTS:

Excise an oval strip and evacuate, blanch the interior thoroughly with a strong desiccating current; follow with daily applications of mercurochrome. Gartner Cysts extending near the vault and alongside the cervix respond to this method.

CERVICITIS (See Erosions):

A strong desiccating current is employed, thoroughly desiccating the entire infected mucosa about the canal. One or more treatments are recommended according to the patient's tolerance and extent of the disease. (See section on Bi-active Coagulation for Double-Needle Technique.)

CERVICAL CYSTS**CERVICAL EROSIONS:****INFECTED GLANDS:****NABOTHIAN CYSTS:**

Infected glands and cysts are punctured with the sharpened needle point and quickly desiccated which sterilizes them. In erosions, each nodule, if any, must be thoroughly desiccated until the tissue has whitened.

CERVICAL CANAL:

Growths within the cervical canal may be treated as though they were on the surface of the cervix. Following a thorough desiccation, patient may carry a degree or so of fever, and it is claimed that this is an indication of absorption of cooked pus creating autogenous vaccine, as a result of which even cases involving endometritis respond. A strong current may be employed in these cases up to the interior os. Scott's mercurochrome is indicated as a post-operative medicant. Slough takes place in about one week to ten days. Periodic observation will avoid the uniting of the lips of the cervix during healing. (See section on Bi-active Coagulation for Double-Needle Technique.)

CERVICAL POLYPS:

These growths up to two centimeters may be thoroughly desiccated at the base without anesthetic. If shallow, they may be sprayed with a desiccating spark until blanched thoroughly. Polyps extending back into the cervical canal may require several treatments.

STERILIZATION:

It has been stated in some of the literature that sterilization can be simplified and done efficaciously by thorough desiccation of a section of the tube.

CONDYLOMATA OF THE VULVA:

These warts may be thoroughly desiccated singly, the same as the various types of warts on the surface of the body. (See Venereal Warts.)

CHRONIC ENDOCERVICITIS AND HYPERTROPHIED CERVIX WITH BI-ACTIVE ELECTROCOAGULATION:

The painful symptoms and underlying pathology of the above conditions are too well known to need elaboration. By and large, it is felt that non-surgical treatment, such as topical applications and irrigations, has proved insufficient. Likewise, cautery, while used with some success, is considered by many to be undesirable because of the development of deep scar tissue and stenosis following its use. Where future childbirth is contemplated, this is believed to be undesirable.

Bi-active coagulation offers a simple and effective procedure. Many physicians declare it the method of choice.

A bi-active electrode is used whereby a strip of tissue in the cervical canal is coagulated about four millimeters wide and one or two millimeters deep, extending up to the internal os. Parallel strips around one-half of the canal are coagulated at the first treatment. Ten days later, the other half of the canal is treated likewise. This avoids opposing raw sides of the cervical canal, as the coagulated tissue sloughs, and reduces incidence of stenosis to a minimum.

The erosions on the vaginal aspect of the cervix may be treated at the same sittings, by light coagulation. No general anesthesia is required; local anesthesia topically may be applied if desired on the nervous, sensitive patient.

The potency of this method lies in the fact that the coagulation of an infected area produces an autogenous vaccine. Some may be hesitant in accepting this statement but those who have done a lot of coagulation on infected tissue, will know from experience, the deep effects secured. Systemic results out of all proportion to the tissue changes, do appear, favorably influencing the deeper infections.

This method is not too rigorous and is very well tolerated by the average patient.

CERVICAL EROSION (See Graber Technic)

Mild coagulation of the vaginal aspect of the cervix has been used with outstanding success by many physicians. The coagulation of a thin film of tissue, as well as the localized cysts and erosions, is obtained with no local anesthesia needed. Oftentimes, treatment of the vaginal aspect of the cervix is sufficient to also clear up an inflammation within the canal. The autogenous vaccine effect produced by the coagulation, may pervade the entire uterus, thus assisting in reducing inflammatory conditions existing within the uterus itself. Post-operative reactions in the patient may be expected to be much less severe than those often following cautery.

"PROCTOLOGY"

ANESTHESIA:

2% novocain injected into the perianal perisphincter tissue is quite sufficient for removal of small skin tags, polyps, hemorrhoids, and fissures.

PRURITUS ANI:

A strong desiccating current applied to the affected area, blanching the skin, brings about excellent results. In more aggravated cases, portions of

the skin may be punctured with a fine needle. Whole areas must be treated thoroughly and many require two or more treatments to assure complete and even dehydration. Healing takes place in one to three weeks.

HEMORRHOIDS:

(See William L. Clark's "Hemorrhoids and Anal Fissures with Special Reference to the Desiccation Method of Treatment." — American Journal Electro-Therapy Radium XLIII, 9, 1925.)

External and internal hemorrhoids may be destroyed with no loss of blood. A thorough anesthetic should be given. The hemorrhoids must be properly exposed to assure proper management of technique. Place a haemostat along the base of the tumor. Insert the sharp needle point at a number of points along the gripping edge of the haemostat. Then insert the point of the needle in the center of the hemorrhoid and desiccate with a fairly heavy current. The hemorrhoid should be well dried up and will shrink to about one-third size. Remove the haemostat. If there is any bleeding, insert needle point and desiccate a little more. Some authorities recommend clipping away the hemorrhoid at its distal apex. The more thorough the desiccation, the less after-pain. (See section on Bi-active Coagulation for Double-Needle Technique.)

FISSURE:

A fairly strong desiccating current is sprayed over the involved tissue. Healing is prompt. There is a little discomfort the first day or two. Do not destroy the tissue deeply. Instruct the patient to keep the area clean and apply antiseptic ointment.

ISCHIORECTAL ABSCESS:

Incise and drain, desiccate the lining of the abscess thoroughly. After-care is the same as for a fissure.

PAPILLOMA:

Small Papillomi are readily desiccated by inserting the point of the desiccating needle. Fairly strong current is used. Larger Papillomi may be treated similarly to hemorrhoids. Larger Papillomi, up within the bowel, require special snares and are best treated with the electrosurgical cutting current in preference to desiccation.

***CARCINOMA:**

Localized small anal Carcinoma may be thoroughly desiccated allowing a wide margin. This should be followed by implantation of Radon seeds. Operations on growths of this kind, require extensive and thorough knowledge of the subject. (See Grant E. Ward's: "Two Cases of Malignant Diseases of the Anus—With Special Reference to Etiology and Treatment with Electrosurgery," International Journal of Medicine and Surgery, XLII, 1929. See also Howard A. Kelly and Grant E. Ward: "Electrothermic Methods in Treatment of Disease in Rectum and Anus.")

*** Suspect lesions should be biopsied. Depending upon size and extent of invasion, electrosurgical excision by means of cutting current may be indicated.**

HEMORRHOIDS (Bi-Active Electrocoagulation)

By referring to this subject under desiccation (Page 23) one will note that coagulation along the clamp is suggested. The bi-active double needle is sometimes preferred by operators who feel that this method is both faster and under more accurate control. Sufficient current to coagulate the base of the pile till the tissue turns a light gray color is deemed adequate. It is advised not to include skin in the jaws of the clamp but to cut tabs away or undercut up to the mucous membrane at the beginning of the pile, to be removed en masse with it. It is customary to cut away the hemorrhoid mass above the clamp, following coagulation. Packing the rectum with vaseline gauze is customary.

NOTE! — When practicing Electrosurgery on Dead Animal Tissue, a better simulation of actual conditions will be secured by holding the experimental tissue in the hand and having it at, or near, body temperature.

DESICCATION OF A MUCOUS CYST

1. Desiccation is an excellent way to handle this Mucous Cyst in a child's lower lip.
2. The needle is inserted deep into the cyst and the entire sac is thoroughly desiccated.



3. A few days later the lip has returned to normal by this simple, painless procedure.



FULGURATION OF A FIBRO-LIPOMA



1. A Fibro-lipoma is an excellent example of the type of growth where fulguration excels.

2. The needle is held over the growth and the spark jumps across to it.

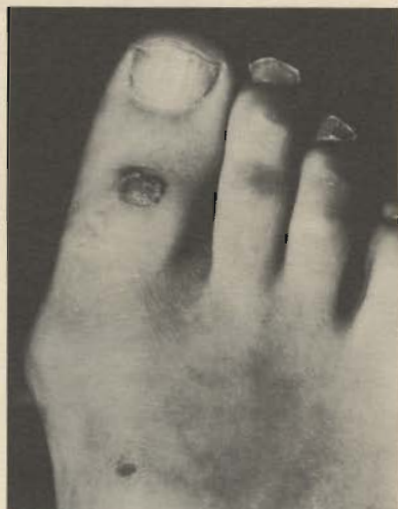


3. The fatty tissues have been carbonized by the fulguration spark.

4. The smooth, lustrous epidermis appearing after the sloughing of the scab presents a very neat and gratifying result.



FULGURATION - DESICCATION OF VERRUCA VULGARIS



1. In treating a Verruca Vulgaris on the big toe prompt healing is important.



2. The little blue spark of fulguration is sprayed all over the growth in just a few seconds.



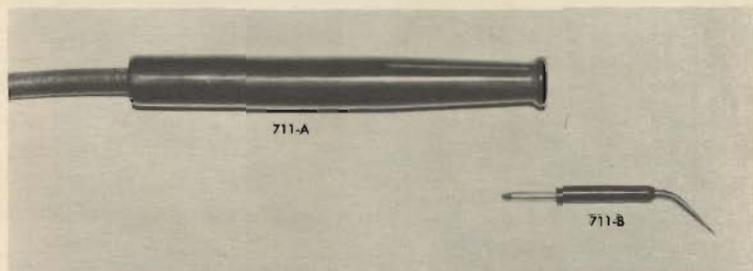
3. The scab drops off a couple of days later.



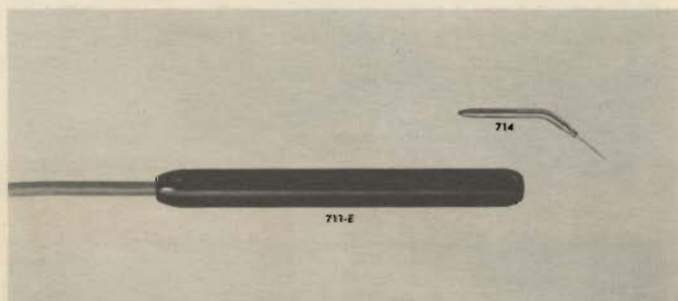
4. A clean, healthy surface appears in a minimum of time.

HYFRECTOR ACCESSORIES

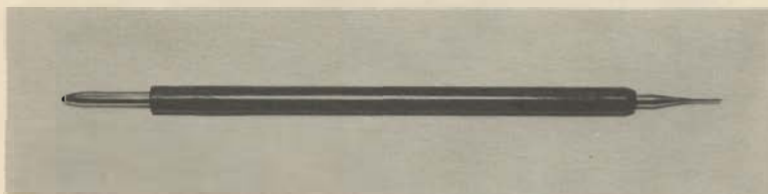
These Electrodes may be used on the Hyfrecator and the Electro-Surgical Unit—when ordering please specify make and model machine with which Electrodes are to be used.



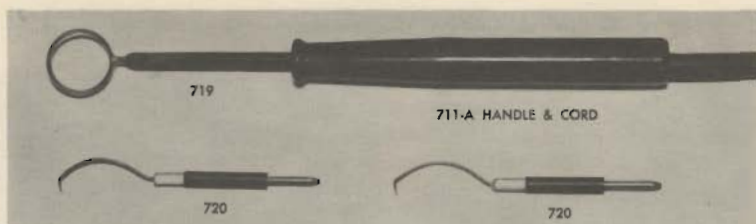
Catalog No. 711 Code Word "HYNED"
HYFRECTOR NEEDLE SET. *Handle and one No. 711-B
curved desiccation fulguration needle*



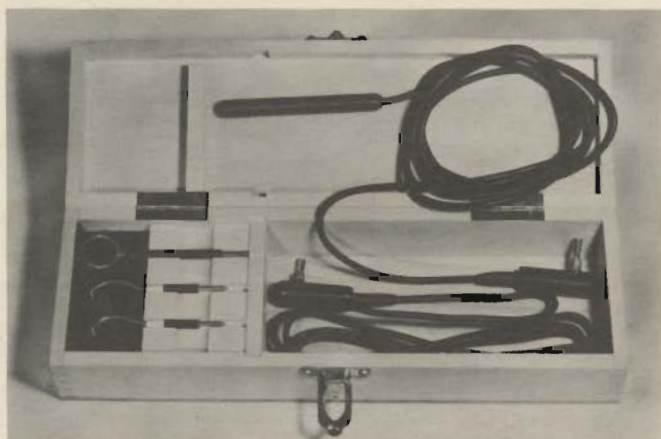
Catalog No. 711-E, Code Word "EPHAN"
EPILATION HANDLE. *Designed for use with No. 713 Epilation Needle*



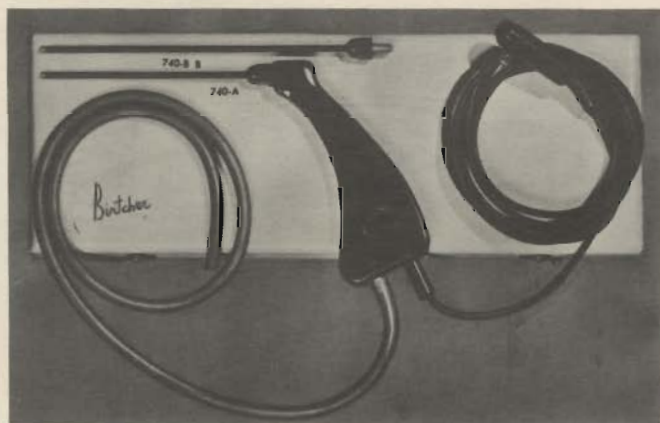
Catalog No. 716, Code Word "TIDEN"
TISSUE DESICCATION NEEDLE. *Fits No. 711-A Handle*
Both the needles and handle illustrated above are supplied as
standard equipment with the "Hyfrecator"



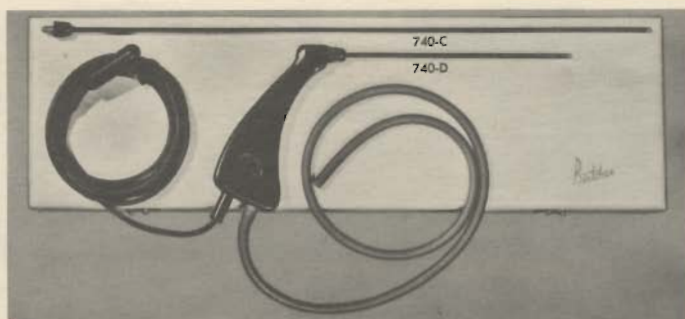
Catalog No. 721, Code Word "RETIN"—RETINAL DETACHMENT SET
Complete with handle, indifferent ring electrode and 2 gradle type needles



Catalog No. 722, Code Word "HUSET"—HURWITZ GLAUCOMA SET
Designed for Electrosurgical treatment of certain types of Glaucoma



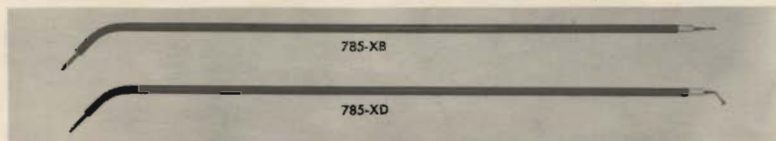
Catalog No. 740, Code Word "NOSET"—NOSE and THROAT
 DESICCATION SET with suction. Active cord, two aspirating type electrodes
 (740-A 4½", 740-B 6½"), moulded handle and hardwood carrying case



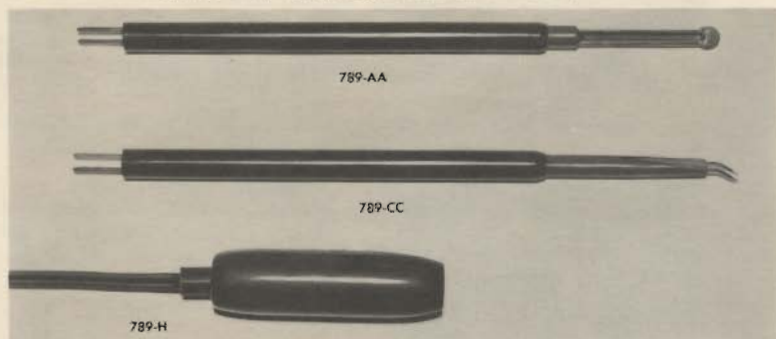
Catalog No. 741, Code Word "DESET"
PROCTO-SIGMOID DESICCATION SET
with suction. Active cord, two aspirating type electrodes
(740-D 8½", 740-C 16"), moulded handle. Can also be used for
introduction of Carbon Dioxide into Colon



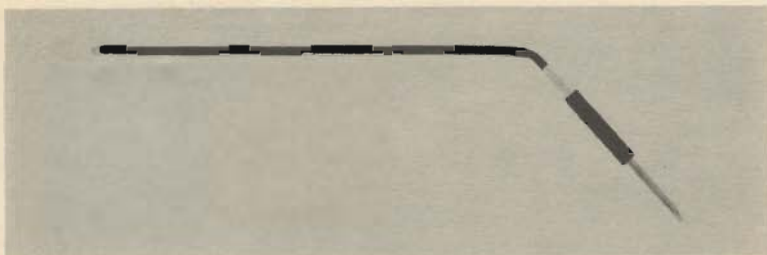
Catalog No. 782, Code Word "GASET"
GRABER BI-ACTIVE ELECTRODE SET
Designed by E. A. Graber, M.D., for electrocoagulation of the Cervix



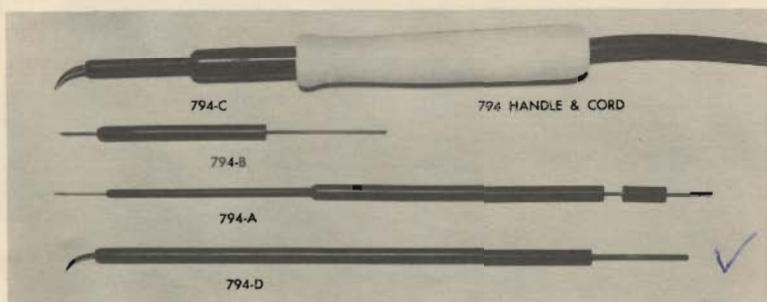
Catalog No. 785X-B—No. 785X-D
PROCTOLOGICAL NEEDLES — 14 INCHES LONG
For use through Proctoscope or Sigmoidoscope
For use with regular Hyfrecator Handle No. 711-A



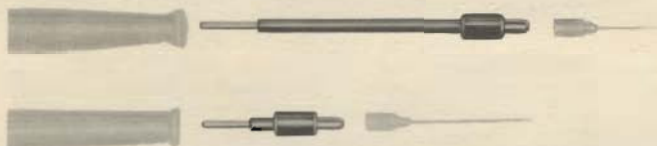
Catalog No. 789, Code Word "COAGU"
BIRTCHER BI-ACTIVE COAGULATION SET
Provides tips for coagulation of cervical canal, cervical cysts and
erosion, tonsil, tonsil tags, rectal tags and all types of surface growth



Catalog No. 727, Code Word "ANYOD—NASAL-EAR COAGULATION ELECTRODE. For coagulation with body cavities; may be used through the otoscope. *Used with 711-A, 711-E, 791 or 791-X Handle and Cord Sets.*



Catalog No. 794, Code Word "SUNIV"
UNIVERSAL DESICCATION-FULGURATION SET
*No. 794 A-B-C-D Needles can be used with the
794 Universal Handle ONLY*



Catalog No. 726—HYPO-HYFRENEEDLE SET
Permits use of hypodermic needles as Hyfrecator electrodes.



Catalog No. 744
SPENCER TONSIL AND
ADENOID SUCTION SET
Special curved aspirating type electrodes for tonsil and adenoid desiccation with suction. Includes curved, moulded handle.

HYFRECATOR INDEX . . . 1961 EDITION

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